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| 10/788,548      | 02/26/2004  | Richard Gustafson    | UNIV0319            | 7056             |

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| EXAMINER |
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CHAN, CEDRIC A

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| ART UNIT | PAPER NUMBER |
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1797

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12/11/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/788,548

**Applicant(s)**

GUSTAFSON ET AL.

**Examiner**

Cedric Chan

**Art Unit**

1797

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 September 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 19, 20, 23, 27, 28, 35-38, 44, 46, 50-52, 54, 55 and 57-59 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20, 23, 44, 46, 50-52, 54, 55 and 57-59 is/are allowed.
- 6) ☒ Claim(s) 19 and 27 is/are rejected.
- 7) ☒ Claim(s) 28 and 35-38 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 April 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. The amendments to the claims dated September 10, 2008 are acknowledged. Claims 1-18, 21-22, 24-26, 29-34, 39-43, 45, 47-49, 53 and 56 have been cancelled, and claims 58 and 59 were newly added. Claims 19, 20, 23, 27, 28, 35-38, 44, 46, 50-52, 54, 55, and 57-59 are pending.
2. Applicant's Remarks/Arguments filed September 10, 2008 have been fully considered. Any rejections and/or objections not repeated herein have been withdrawn.

### ***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. **Claim 19 and 27** are rejected under 35 U.S.C. 103(a) as being unpatentable over Jang (US 6,806,955) in view of Lichtwardt et al. (US 5,902,749).

Jang teaches a method and apparatus for measuring physical and chemical properties of fibers and fiber-like particles (see Title/Abstract). The system of Jang comprises a light source (1) for applying excitation light at a selected wavelength to fibers to produce fluorescence emission light having a fluorescent spectral distribution (see Col. 8 line 65 thru Col. 9, line 9). A Xenon lamp may be used as the light source, for example (see Col. 9, line 7).

The system further comprises a detector (2) for detecting/monitoring the intensity of excitation light, and an excitation/collection optics system including filters and a dichroic mirror (see Col. 9, lines 12-23). The light/optics system further comprises a

beam splitter (5) and collection optics (6,9) including lenses, cameras, and/or fiber optics (see Col. 9, lines 35-40). Barrier/bandpass filters (7,10) allow for selecting different and/or same regions of fluorescence emissions to be detected, analyzed, and/or imaged.

A fluorescence detector/imaging/spectral analyzer (8, 11) system comprises light detectors (plural) for detecting fluorescence emission intensity, and/or for fluorescence imaging, and/or for determining the spectral distribution of fluorescence intensity and establishing signals thereof. Jang further discloses a single and/or linear array of detectors made of photomultiplier tubes, digital camera, CCDs, CMOS cameras, etc. (see Col. 9, lines 49-65). The fluorescence detectors function to measure/calculate/determine various chemical and physical properties of the fluorescent fibers being studied, including geometric properties such as fiber width, coarseness, and Kappa number (i.e., lignin content).

The system also includes data processing and recording means (15) for recording, analyzing, and outputting the data (see Col. 10, lines 5-6).

The fluid-suspended fibers are flowed through a flow cell (4) in order to achieve "rapid measurements such as in an online instrument." The cross-section of a flow cell can be square, rectangular, and circular in shape. The invention is disclosed as being capable of working for fibers that are either flowing/moving, or stationary (see Col. 9, lines 25-30). In one aspect of the invention of Jang, fibers were dyed with a fluorochrome (i.e., fluorescent dye) (see Col. 4, lines 34-36).

While Jang discloses the use of a flow cell (4), there is no mention in patent '955 of an inlet or outlet of the flow cell; nor is a transparent "sample holding region" described. However, it is well known in the art that a flow cell must by definition comprise an inlet and an outlet in order for fluid flow through the cell to be achieved. Thus it would have been obvious to one of ordinary skill in the art to use a flow cell having an inlet/outlet and a holding region, so that sample could be flowed through the cell. Also, while Jang does not specifically disclose a conduit for delivering a pulp sample to the inlet of the flow cell, it would have been obvious to one of ordinary skill in the art to provide such a conduit, again, to utilize said flow cell for its stated purpose. One of ordinary skill in the art would be well apprised of the fact that only such a flow cell configuration would make "online measurement," disclosed by Jang, possible. It would have been obvious to one of ordinary skill to utilize a flow cell having a transparent sample holding region, in order to use the fluorescence analyzer device of Jang to determine the various properties of a fiber sample.

Jang also does not specifically teach the "means to control an amount of stain in solution in the flow cell to an extent desired without undesirably reducing an amount of stain that is bound to the pulp fiber sample" recited in claim 19.

Lichtwardt et al. (hereinafter, "Lichtwardt") teach a chemical metering and control system for maintaining a desired level of a pesticide (or other chemical) in any open or closed channel flow stream with fluctuating flow rates (see Abstract). The system dispenses an amount of the pesticide (or other chemical) mixed with an indicating dye at an injection point along a system flow stream, and then takes a sample of the flow

stream downstream from the injecting point to determine how much indicating dye is present in the flow stream. More specifically, at the sampling point, a pump extracts a flow stream sample and passes the sample to a fluorometer which measures the amount of fluorescent indicating dye injected upstream so that a proportional integral derivative (PID) controller can adjust the level of the pesticide/dye mixture in order to achieve the appropriate concentration of pesticide in the flow stream (see Col. 1 line 60 thru Col. 2 line 10).

It is noted that while the apparatus of Lichtwardt is disclosed as working upon a different material than does the apparatus claimed in the present invention, the material worked upon is of no significance in determining patentability of the claims herein. In fact, the Courts have held that "inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims." See *In re Young*, 75 F.2d 996, 25 USPQ 69 (CCPA 1935). Thus, while Lichtwardt's chemical control system is disclosed as working on a pesticide/fluorescent dye mixture, it would be perfectly capable of controlling the release of another chemical, e.g. dye, in the invention of the present application.

It would have been obvious to one of ordinary skill in the art to modify the fiber-analyzing apparatus of Jang with the chemical control system of Lichtwardt, in order to closely monitor and control the concentration of the fluorescent dye in solution.

***Response to Arguments***

5. Applicant's Remarks/Arguments filed September 10, 2008 have been fully considered. Examiner's findings are summarized below.

Applicant asserts that Lichtwardt/Jang do not teach an equivalent to the system described in the apparatus recited in claim 19. Examiner respectfully disagrees. Applicant's disclosure identifies the structural features of the recited "means for reducing an amount of stain in solution" of claim 19. "Rather than bleaching all of the background fluorescence with an uncontrolled excess of bleach, the background fluorescence is kept at a low level with feedback control of the pump 22. The bleach concentration in solution is quickly reduced by this control before much bound stain can react with the bleach. A simple proportional/integral controller will provide the amount of control performance that is desired" (From Applicant's Disclosure).

In Lichtwardt's system, the detector measures the amount of fluorescent indicating dye (which is mixed in a known/pre-determined proportion with pesticide) is in a channel flow stream, at a downstream sampling point. The PID controller adjusts the level of the pesticide/dye mixture injected such that the concentration of pesticide (as indicated by the level of fluorescence of the indicator dye, i.e. amount of dye) is maintained at a desired level. Thus, if there is too much pesticide in the water, the PID controller will reduce the amount of pesticide/dye mixture injected into the flow stream. It follows that the dilutive effects of such an operational adjustment would also necessarily result in a reduction of the amount of dye in solution.

Applicant also asserts that Lichtwardt's disclosure does not teach or suggest the additional functional limitation that the amount of stain in solution is reduced "without undesirably reducing an amount of stain that is bound to the pulp fiber sample...."

Examiner respectfully disagrees with Applicant for the following reasons: in Lichtwardt's invention, the amount of fluorescent dye is said to be an indicator of the presence of pesticide. Specifically, the detector measures the fluorescence of a sample, and sends an analog output signal to the control unit (12) which controls the pesticide/dye injection according to the output signal. It follows then, that if fluorescence is taken to be proportional to the pesticide concentration, then the reduction of fluorescent dye/stain in solution cannot result in a reduction of bound dye/stain (otherwise, the output signal of the fluorescence detector would not be a valid indicator of pesticide concentration in Lichtwardt's system).

Applicant argues that the prior art does not teach a configuration of the instant invention per Fig. 3 wherein light enters and exits the (transparent) flow cell using the same transparent wall. It is noted that if a cell is transmitted, then excitation light energy from within the cell can be transmitted in an infinite number of directions (certainly, it can pass through the same transparent wall that is illuminated by the excitation light). Thus, it is held that the limitation presented in currently amended claim 27 is merely an inherent property of the transparent material that the flow cell is made of, and that any flow cell with "transparent" walls would be capable of transmitting fluorescence through any of its transparent walls. Note, the obviousness of the modification of



Jang/Lichtwardt to include a transparent flow cell is discussed above. For the reasons stated above, the rejection of claim 27 under 35 U.S.C. 103(a) has been maintained.

Applicant argues that the prior art does not teach a system such that a (single) mirror is able to both reflect filtered light toward the pulp fiber sample in a flow cell and to enable fluorescence from the pulp fiber sample in the flow cell to pass through the mirror before reaching a detector logically coupled to a fluorescence analyzer. Applicant's argument is persuasive, and the rejection of claims 20 and 50 under 35 U.S.C. 103(a) is hereby withdrawn. Ogino ('717) teaches two separate dichroic mirrors, but not one which is specifically configured to function as described above.

Furthermore, Examiner agrees with the Applicant that Ogino discloses a first dichroic mirror that directs light toward a sample, and a second dichroic mirror that directs light from the sample toward a detector, but does not teach an embodiment wherein "no additional optical element is disposed between the first and second dichroic mirrors." The previous rejection of claim 23 is hereby withdrawn.

***Allowable Subject Matter***

6. Claims 20, 23, 44, 46, 50, 51, 52, 54, 55, and 57-59 are allowed.
7. Claims 28 and 35-38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
8. The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach a system such that a (single) mirror is able to both

reflect filtered light toward the pulp fiber sample in a flow cell and to enable fluorescence from the pulp fiber sample in the flow cell to pass through the mirror before reaching a detector logically coupled to a fluorescence analyzer (claims 20 and 50). The cited prior art teaches a first dichroic mirror that directs light toward a sample, and a second dichroic mirror that directs light from the sample toward a detector, but the prior art does not teach or fairly suggest an embodiment wherein "no additional optical element is disposed between the first and second dichroic mirrors" (claim 23). Furthermore, the prior art made of record does not specifically teach or fairly suggest a means for analyzing fluorescence capable of functioning according to the algorithm laid out in claim 44, nor does the prior art teach a means to analyze fluorescence emitted from a pulp fiber sample to determine (specifically) a fiber geometry, total charge, and lignin content of said fiber sample as in claim 46, to apply a correction to data provided by a second detector (claim 51), or to extract a particle fluorescence ratio from data (claim 52). Claims 58 and 59 recite the apparatus of the instant invention comprising means for controlling an amount of stain in solution having configurations not taught in the prior art of record.

### ***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cedric Chan whose telephone number is (571) 270-3721. The examiner can normally be reached on Monday-Thursday 8:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. C./  
Examiner, Art Unit 1797

/Jill Warden/  
Supervisory Patent Examiner, Art Unit 1797